

Notice of Allowability

Application No.

10/551,959

Examiner

Sow-Fun Hon

Applicant(s)

MURAKAMI ET AL.

Art Unit

1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.
2. ☒ The allowed claim(s) is/are 1,2,4-9 and 11-19.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 10/05,1/06,4/06
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 12/18/06
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☒ Other See Continuation Sheet.

Continuation of Attachment(s) 9. Other: The drawings filed 10/06/05 are accepted by the Examiner.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Nicolas Seckel on December 18, 2006.

The application has been amended as follows:

2. Claims 3 and 10 are cancelled.
3. Substitute claim 1 with:

- - A method for producing an optical film comprising a base and a biaxially birefringent layer, the method comprising: a step of coating a material of the birefringent layer on the base so as to form a coating film; and a step of solidifying the coating film on the base so as to form the birefringent layer, where the material that is coated on the base in the coating step is prepared as a coating solution by dispersing or dissolving the material in a solvent, and the solvent used exhibits solubility with respect to the base; wherein the base is composed of a transparent polymer, and the birefringent layer is formed of a polymer and laminated directly on the base, wherein the birefringent layer and the base together satisfy a formula (1) below, the birefringent layer satisfies formulae (2) and (3) below, and the polymer forming the birefringent layer has a weight-average molecular weight in a range between 10,000 and 400,000 inclusive;

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$$\Delta n(a) > \Delta n(b) \times 10 \quad (1)$$

$$1 < (n_x - n_z) / (n_x - n_y) < 100 \quad (2)$$

$$0.0005 \leq \Delta n(a) \leq 0.5 \quad (3)$$

where $\Delta n(a)$ denotes a birefringence of the birefringent layer and is represented by $[(n_x + n_y) / 2] - n_z$, wherein n_x and n_y and n_z denote the respective indices in the X-, Y- and Z-axes directions of the birefringent layer; and $\Delta n(b)$ denotes a birefringence of the base and is represented by $[(n_x' + n_y') / 2] - n_z'$, wherein n_x' , n_y' and n_z' denote the respective indices in the X-, Y- and Z-axes directions of the base; where the X-axis direction denotes an axial direction presenting a maximum refractive index within the birefringent layer and the base, the Y-axis direction denotes an axial direction perpendicular to the X-axis within the plane, and the Z-axis direction denotes a thickness direction perpendicular to the X-axis and Y-axis. - -

5. Amend claim 6: Line 1: After "The method according to claim 1, wherein the", replace "material" with - - polymer - -.

6. Amend claim 9, Lines 2-3: After "film according to claim 1", delete " , and which comprises a base and a birefringent layer laminated directly on the base".

7. Substitute claim 16 with:

- - - An optical film comprising a base and a birefringent layer,

wherein the base is composed of a transparent polymer, and the birefringent layer is formed of a polymer and laminated directly on the base, wherein the birefringent layer and the base together satisfy a formula (1) below, the birefringent layer satisfies

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formulae (2) and (3) below, and the polymer forming the birefringent layer has a weight-average molecular weight in a range between 10,000 and 400,000 inclusive;

$$\Delta n(a) > \Delta n(b) \times 10 \quad (1)$$

$$1 < (n_x - n_z) / (n_x - n_y) < 100 \quad (2)$$

$$0.0005 \leq \Delta n(a) \leq 0.5 \quad (3)$$

where $\Delta n(a)$ denotes a birefringence of the birefringent layer and is represented by $[(n_x + n_y) / 2] - n_z$, wherein n_x and n_y and n_z denote the respective indices in the X-, Y- and Z-axes directions of the birefringent layer; and $\Delta n(b)$ denotes a birefringence of the base and is represented by $[(n_x' + n_y') / 2] - n_z'$, wherein n_x' , n_y' and n_z' denote the respective indices in the X-, Y- and Z-axes directions of the base; where the X-axis direction denotes an axial direction presenting a maximum refractive index within the birefringent layer and the base, the Y-axis direction denotes an axial direction perpendicular to the X-axis within the plane, and the Z-axis direction denotes a thickness direction perpendicular to the X-axis and Y-axis, and wherein the optical film further comprises a compatible layer in which a material of the base and a material of the birefringent layer are mixed. - -

8. Amend claim 17: Line 1: Replace "An" with - - The - -.

9. Amend claim 18: Line 1: Replace "An" with - - The - -.

10. Amend claim 19: Line 1: Replace "An" with - - The - -.

Reasons for Allowance

11. The following is an examiner's statement of reasons for allowance.

The closest cited prior art of record, US 5,750,641, fails to teach or suggest, even in view of US 5,625,474, US 6,359,669 and US 6,795,246:

a) The combination of a method for producing an optical film comprising a base and a biaxially birefringent layer, the method comprising: a step of coating a material of the birefringent layer on the base so as to form a coating film; and a step of solidifying the coating film on the base so as to form the birefringent layer, where the material that is coated on the base in the coating step is prepared as a coating solution by dispersing or dissolving the material in a solvent, and the solvent used exhibits solubility with respect to the base; wherein the base is composed of a transparent polymer, and the birefringent layer is formed of a polymer and laminated directly on the base, wherein the birefringent layer and the base together satisfy a formula (1) below, the birefringent layer satisfies formulae (2) and (3) below, and the polymer forming the birefringent layer has a weight-average molecular weight in a range between 10,000 and 400,000 inclusive;

$$\Delta n(a) > \Delta n(b) \times 10 \quad (1)$$

$$1 < (n_x - n_z) / (n_x - n_y) < 100 \quad (2)$$

$$0.0005 \leq \Delta n(a) \leq 0.5 \quad (3)$$

where $\Delta n(a)$ denotes a birefringence of the birefringent layer and is represented by $[(n_x + n_y) / 2] - n_z$, wherein n_x and n_y and n_z denote the respective indices in the X-,

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Y- and Z-axes directions of the birefringent layer; and $\Delta n(b)$ denotes a birefringence of the base and is represented by $[(n_x' + n_y') / 2] - n_z'$, wherein n_x' , n_y' and n_z' denote the respective indices in the X-, Y- and Z-axes directions of the base; where the X-axis direction denotes an axial direction presenting a maximum refractive index within the birefringent layer and the base, the Y-axis direction denotes an axial direction perpendicular to the X-axis within the plane, and the Z-axis direction denotes a thickness direction perpendicular to the X-axis and Y-axis. (None of the references teach the biaxially birefringent layer (a) which satisfies the optical conditions set by formulae (2) and (3), as related to the relationship with transparent polymer film (b) set by formula (1)); or

b) The combination of an optical film comprising a base and a birefringent layer, wherein the base is composed of a transparent polymer, and the birefringent layer is formed of a polymer and laminated directly on the base, wherein the birefringent layer and the base together satisfy a formula (1) below, the birefringent layer satisfies formulae (2) and (3) below, and the polymer forming the birefringent layer has a weight-average molecular weight in a range between 10,000 and 400,000 inclusive;

$$\Delta n(a) > \Delta n(b) \times 10 \quad (1)$$

$$1 < (n_x - n_z) / (n_x - n_y) < 100 \quad (2)$$

$$0.0005 \leq \Delta n(a) \leq 0.5 \quad (3)$$

where $\Delta n(a)$ denotes a birefringence of the birefringent layer and is represented by $[(n_x + n_y) / 2] - n_z$, wherein n_x and n_y and n_z denote the respective indices in the X-, Y- and Z-axes directions of the birefringent layer; and $\Delta n(b)$ denotes a birefringence of

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the base and is represented by $[(n_x' + n_y') / 2] - n_z'$, wherein n_x' , n_y' and n_z' denote the respective indices in the X-, Y- and Z-axes directions of the base; where the X-axis direction denotes an axial direction presenting a maximum refractive index within the birefringent layer and the base, the Y-axis direction denotes an axial direction perpendicular to the X-axis within the plane, and the Z-axis direction denotes a thickness direction perpendicular to the X-axis and Y-axis, and wherein the optical film further comprises a compatible layer in which a material of the base and a material of the birefringent layer are mixed. (None of the references teach the birefringent layer (a) which satisfies the optical conditions set by formulae (2) and (3), as related to the relationship with transparent polymer film (b) set by formula (1); combined with a compatible layer in which a material of the base and a material of the birefringent layer are mixed).

The terminal disclaimer and statement of common ownership has obviated any double patenting and prior art issues over US 7,054,049 and US 7,128,952.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number is (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached at (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Hon

Sow-Fun Hon

12/18/06


RENA DYE
SUPERVISORY PATENT EXAMINER